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OMS

Advisory Circular

SUBJECT: Policies Applicable to the Fuel Economy Labeling and Compliance Programs

I. Purpose

A. The purpose of this advisory circular (A/C) is to discuss and establish general policies applicable to the fuel economy labeling and compliance programs.

B. This A/C supersedes A/C No. 83 beginning with the 1986 model year.

II. Background

A. This A/C updates the policies set forth in A/C No. 83. Advisory Circular No. 83 established general fuel economy policies applicable to 1979 and later model years for both labeling and compliance programs.

B. Subsequent to the issuance of A/C No. 83, new technology and unforeseen situations necessitated updated policy interpretation which took the form of Certification Division letters to the manufacturers. This A/C consolidates many of these policies.

C. EPA published major revisions to 40 CFR Part 600 on April 6, 1984, which were effective on May 7, 1984 (Ref: 49 FR 13832). This A/C provides guidance for the implementation of the new regulations.

D. This A/C combines 49-state and California sales into a single basic engine as discussed in the preamble to the April 6, 1984 regulations. It also consolidates and updates policy in the areas of basic engine and transmission configuration definitions. The current policy is expanded for vehicle and data substitutions and equivalencies to allow manufacturer approval for specific situations; three percent axle ratio equivalencies are discontinued.

III. Applicability

A. This A/C is applicable to 1986 model year and later model year passenger automobiles and light trucks.

B. All policies discussed in this A/C, unless specifically noted, apply to both the fuel economy labeling and compliance programs.

C. If the manufacturer elects (where allowed) to optionally use provisions of the 1986 model year regulations (Ref: 49 FR 13832) for the 1985 model year, the appropriate 1986 model year policies would be applicable.

IV. Definitions

A. Basic Engine

1. A "basic engine" is defined in the regulations as a unique combination of manufacturer, engine displacement, number of cylinders, fuel system (as distinguished by number of carburetor barrels or use of fuel injection), and catalyst usage and other engine and emission control system characteristics specified by the Administrator. The following additional engine characteristics are determined to distinguish separate basic engines:

a. The parameters corresponding to the engine family parameters specified in 40 CFR 86.085-24(a)(2) and reported to EPA by the manufacturer as "Common Family Parameters" in the application for certification.

b. Engine usage:

(1) Light-duty vehicles (as defined in 40 CFR, Part 86).

(2) Light-duty trucks (as defined in 40 CFR Part 86).

(3) Police-only configurations. "Police-only" configuration means a vehicle configuration offered for sale only to the United States or a state or local government to be used for police or law enforcement purposes, as an ambulance, or other similar emergency vehicle markets.

c. The use of a feedback-type fuel system.

d. The use of variable valve timing:

(1) Any engine on which the valve timing may be varied from one combustion cycle to the next will be a distinct basic engine.

(2) Any engine on which valve timing can change between functioning and non-functioning modes will be a distinct basic engine.

e. Turbocharger or supercharger usage.

f. The type of fuel injection: single-point or multi-point.

Note: For the 1986 and later model years California emission control systems will no longer distinguish separate basic engines.

2. If engines are classified as different basic engines only because of differences in the engine characteristics specified in subparagraphs "a" through "f" above (except paragraph b, engine usage), then some means of identifying the difference must be incorporated on fuel economy labels and in the Gas Mileage Guide. Engine descriptors for those situations will be provided by EPA in a separate document.

B. Transmission Class

1. The provisions of 40 CFR 600.002-85(a)(22) define transmission class and allow the Administrator to expand the definition to include additional transmission characteristics. The parameters specified in the regulations that distinguish transmission class are:

a. Basic Transmission Type. Under this provision, EPA will distinguish automatic, manual, semiautomatic, and continuously variable transmissions as separate transmission classes.

b. Number of Forward Gears. When determining the number of forward gears, EPA will consider only gears used in testing. Consequently, vehicles equipped with manual transmissions with and without a creeper gear (gear ratio greater than 5.000) are considered to be in the same transmission class as manual transmissions without the creeper gear.

c. Drive System. EPA will consider front-wheel drive, rear-wheel drive, and four-wheel drive as separate transmission classes.

d. Overdrive. EPA will consider non-overdrive, overdrive (top gear ratio less than 1.00), electronic overdrive unit, and computer controlled "automatic" electronic overdrive unit equipped transmissions as separate transmission classes.

e. Torque Converter Type. EPA will consider transmissions equipped with lockup torque converters, non-lockup torque converters, and variable ratio torque converters as separate transmission classes.

2. EPA will also distinguish transmission classes based on the presence of the following parameters:

a. Shift Indicator Lights (SIL's). The SIL is a light that indicates when the driver should shift to the next higher gear. EPA will consider vehicles equipped with a SIL or similar acceptable device and vehicles without a SIL or similar acceptable device as separate transmission classes.

b. Engine Management System. Vehicles equipped with an engine management system (a stop/start engine device, such as Volkswagen's SNA system) will be in separate transmission classes from those not equipped with an engine management system.

c. Multi-mode Transmission Usage and Number of Modes. Multi-mode transmission means an automatic, a manual or a semi-automatic transmission that has an operator selectable feature that changes transmission parameters such as gear ratios or automatic transmission shift speed calibrations. Electronic overdrive features or variable lockup calibration features are not considered multi-mode transmissions. Multi-mode transmissions (e.g., Mitsubishi M4X2) are treated as separate transmission classes. Furthermore, the number of different modes available in a given transmission determines a separate transmission class.

d. De-clutching or Free-wheeling Transmission. Vehicles equipped with a declutching or freewheeling transmission will be in separate transmission classes than vehicles not equipped with this device.

e. Variable Lockup Point Device. A transmission that has variable (either continuously variable or a number of distinct ranges) operator selectable lockup characteristics will be classified as a separate transmission class from vehicles without this device. Differences in the number of ranges further divide transmissions into separate classes.

C. Transmission Configuration

Under the provisions of 40 CFR 600.002(a)(27), EPA may specify parameters that will distinguish separate transmission configurations. EPA establishes the following parameters as transmission configuration determiners:

1. Gear Ratios. Transmissions (automatic, manual, and semi-automatic) with different gear ratios in any gear used in fuel economy testing will be placed in separate transmission configurations.

2. Torque Converter Lockup RPM. Automatic (or semi-automatic) transmissions with a lockup torque converter will be further subdivided into transmission configurations based on the lockup rpm in each gear. Computer controlled lockup rpm torque converter transmissions will be placed in separate transmission configurations from single calibration (non-computer controlled) lockup torque converters. Computer controlled lockup torque converter transmissions will be further divided by the lockup rpm computer calibration curves.

D. Sales Projections

Under the provisions of 40 CFR 600.207-86(a)(3)(iii), the manufacturer is required to update sales projections at the time of label calculation. The manufacturer should use the latest sales projections that are available. Sales projections over six weeks old are not acceptable. Whenever possible, the sales projections should be generated by the general corporate sales projection system for that manufacturer.

V. Separate Fuel Economy Calculations

A. Separate Model Type Calculations for Passenger Automobiles and for Light Trucks

1. Light-duty truck engines will be considered different "basic engines" than light-duty vehicle engines of the same displacement. (See the additional delineation of "basic engine" described in paragraph IV.A.) Additionally, separate base level and model type fuel economy calculations will be required for passenger automobiles and for light trucks. For example, the Chevrolet El Camino and Malibu might both be available with the 350-CID 4-barrel engine and might both be tested at the same inertia weight. However, separate base level and model type calculations would be performed since the El Camino is a light truck and the Malibu is a passenger automobile.

2. When base level and model type calculations are made, as described in paragraph 1 of this section, the test vehicles used in the calculations and the associated sales projections must be appropriate for the category (i.e., passenger automobile or light truck) being calculated. For example, when calculating light truck fuel economy values, the test vehicles must employ combinations of transmission code, evaporative emission code, catalyst code, N/V, road-load horsepower, etc., which are appropriate for light trucks. Even if a particular group of passenger automobiles and light trucks

D. Engine Code Equivalencies and Data Substitutions

1. Engine Code Equivalencies

a. At the manufacturer's request, EPA will consider two engine codes equivalent if it could be expected that a test vehicle would achieve the same fuel economy results in both configurations for both the EPA city and highway test when tested in accordance with standard procedures.

b. The manufacturer may consider engine codes equivalent without prior EPA approval in the following situations:

(1) The sole difference is an idle rpm solenoid (such as for an air conditioner) which is not activated during the city and highway test. (Note that a vehicle which has its dynamometer horsepower increased to simulate air conditioning may not be considered equivalent to a vehicle with a lower dynamometer horsepower.)

(2) The sole difference is an altitude self-compensation device and both engine codes have the same calibration parameters at low-altitudes.

c. Once engine code equivalency has been approved for two engine codes, it will remain in effect for the entire model year. If additional test data are subsequently provided, it will be harmonic averaged with existing fuel economy data and applied to both of the equivalent engine codes.

2. Data Substitutions

a. The manufacturer may request EPA approval to use test data generated in a worst-case subconfiguration to represent a subconfiguration which would achieve better fuel economy.

b. The manufacturer may make data substitutions without prior EPA approval in the following situations:

(1) Election to Test at Higher Equivalent Test Weight (ETW) under 40 CFR 86.084-26. Under the provisions of 40 CFR 86.084-26, if the loaded vehicle weight listed in a manufacturer's application for certification is within 100 pounds of being included in the next higher equivalent test weight, the manufacturer may elect to conduct the respective emission tests at the next higher equivalent test weight. Data generated under this provision will be used to satisfy the provisions of 40 CFR Part 600. Test data generated at a larger

weight can be used in lieu of test data for an otherwise identical (or equivalent) test condition at a lower weight provided no data exist at the correct ETW (see paragraph C). By exercising the option to test at the higher ETW, the manufacturer accepts substitution of these data to the lower ETW.

(2) Testing at a Higher ETW. EPA will allow tests generated at a higher ETW to represent an otherwise identical (or equivalent) test condition at a lower ETW.

(3) Testing at Higher Dynamometer Horsepower. EPA will allow testing conducted at a higher dynamometer horsepower to represent an otherwise identical (or equivalent) test condition at a lower dynamometer horsepower.

(4) Testing at a Higher Numerical Axle Ratio. EPA will allow testing conducted with a higher numerical axle ratio to represent an otherwise identical (or equivalent) test condition with a lower numerical axle ratio.

(5) Testing at Low-Altitude. EPA will allow testing conducted at low altitude to represent an otherwise identical (or equivalent) high altitude test condition specified for a high altitude only engine code.

(6) Combinations of Worst-Case Parameters. EPA will allow testing conducted with any combination of the worst-case situations listed in paragraphs (1) through (5) above to represent a test condition that is otherwise identical (or equivalent).

c. If actual test data is subsequently provided for a vehicle subconfiguration represented by a data substitution, then the manufacturer may elect to have only the actual test data represent the vehicle subconfiguration and may retract their request for data substitution.

E. Test Vehicle Equivalencies and Substitutions

EPA has determined that certain vehicle parameters, in addition to parameters that define subconfigurations, may have an effect on fuel economy. Consequently, EPA has prescribed that these additional parameters must be installed (or simulated) on fuel economy data vehicles to qualify for use in the fuel economy program. (Refer to paragraph C of section VI of this A/C.) EPA will grant test vehicle equivalency when the manufacturer can show that these additional parameters have

no effect on fuel economy and test vehicle substitution when the fuel economy would be greater if these additional parameters were installed.

1. Test Vehicle Equivalencies

a. At the manufacturer's request, EPA will determine test vehicle equivalency as follows:

(1) Every test vehicle must be covered by a certificate of conformity and be described in the appropriate application for certification.

(2) If a manufacturer wishes to use a test vehicle to represent a certain production vehicle, the test vehicle must be identical to the vehicle being represented or determined by EPA to be equivalent.

(3) EPA will determine that vehicles are equivalent if it could be expected that the test vehicle would achieve the same fuel economy results in both test conditions on both the EPA city and highway test when tested in accordance with standard procedures.

(4) EPA will not grant test vehicle equivalency if the two vehicles are in different subconfigurations.

b. EPA has determined that vehicles which differ solely in fuel tank size of up to 50 percent (of the larger volume fuel tank) may be considered equivalent for the purposes of generating fuel economy data. Prior EPA approval is not required in this situation. This determination does not apply to differences in curb weight or other parameters (e.g., engine code or purge rate) that may accompany differences in fuel tank size.

c. Vehicles are required to be tested in the highest selling transmission code in the vehicle subconfiguration. EPA will consider vehicle equivalencies for different transmission codes on a case-by-case basis.

2. Test Vehicle Substitutions

a. EPA will grant test vehicle substitutions in situations where the test vehicle was tested in a different test condition and the fuel economy of the test condition not tested would be expected to be higher for both the EPA city and highway test (i.e., worst-case data were generated).

b. The following situations are examples of test vehicle substitutions that EPA will approve:

(1) Optional Equipment. All optional equipment that affects emissions or fuel economy with 33 percent or higher installation rate should be installed on the test vehicle. Items such as air-conditioning, power steering, power brakes, heavy-duty alternator, can be considered worst-case when installed; a test vehicle with these options installed could represent a vehicle without them.

(2) Tires. No equivalencies or substitutions will be given for differences in tires unless the manufacturer has elected to keep track of tire type sales (Ref: A/C No. 55B, paragraph IX). If tire sales are tracked, the manufacturer may apply for substitution so that higher rolling resistance tires may represent lower rolling resistance tires. EPA will consider such requests on a case-by-case basis.

(3) Transmission Code. EPA will consider vehicle substitutions for transmission code differences on a case-by-case basis.

c. EPA will not grant vehicle substitution in situations where there is a difference that distinguishes separate subconfigurations.

F. EPA Approval of Analytically Derived Fuel Economy Data

Under the provisions of 40 CFR 600.006-85(e), EPA may approve data generated by analytical expressions in lieu of actual test data. If an actual test can be reasonably conducted, EPA will not approve analytically adjusted data. EPA will not approve the use of analytically derived data for unique labels (ref. paragraph VI.A.2). EPA will only consider manufacturer requests which meet all the following criteria:

1. The manufacturer no longer has sufficient leadtime or availability of test vehicles to conduct an actual test.

2. The manufacturer has actual test data generated on a comparable vehicle.

3. The request is to adjust the fuel economy of a comparable vehicle downwards based on differences in test parameters. EPA will not award increased fuel economy based on differences between the tested vehicle and the required test vehicle.

4. The analytically adjusted test values are intended to satisfy a required FEDV test condition. Analytical data will not be accepted for use as voluntary data.

VII. Fuel Economy Labeling Procedures

A. Calculation and Approval of Label Values

1. Under the provisions of 40 CFR 600.312-86 manufacturers must calculate and approve their own label values for the 1986 and later model years. Manufacturers have this option for the 1985 model year, providing the minimum data requirements of 40 CFR 600.010-86(c) are satisfied.

2. All initial calculation label values must be submitted together with sufficient information to calculate the fuel economy label values to EPA at least 5 working days before vehicles are offered for sale in accordance with 40 CFR 600.313-86(a). Recalculated label values must be submitted at least 5 days before the implementation of the running change.

3. EPA considers values "submitted" when the manufacturer has successfully entered the label values in the EPA computer data base (a receipt will be issued).

B. Label Updating

1. Reasons for Recalculation

a. 40 CFR 600.314-86 establishes the criteria that require label value recalculations. The label values for all model types included in a base level affected by a running change specified in 40 CFR 600.507(a) will be recalculated.

b. Label values may not be recalculated for any other reason, without prior EPA approval.

2. Minimum Data Requirements and Sales Projections

a. The manufacturer is required to supply updated sales projections to recalculate label values.

b. The minimum data requirements of 40 CFR 600.010-86(c) and the data requirements of 40 CFR 600.314-86 must be satisfied.

3. Relabeling

For each model type in a base level affected by a running change specified in 40 CFR 600.507(a), the recalculated and the current label values (both city and highway) are rounded to the nearest 0.1 mpg.

a. If the recalculated city or highway label value is at least 1.0 mpg less than the current label value, then that model type must be relabeled with both the recalculated city and highway values.

b. If the recalculated city or highway label values are at least 1.0 mpg higher than the current label value, then the manufacturer has the option to relabel the model type with both the recalculated city and highway values.

c. If the recalculated city and highway label values are not at least 1.0 mpg different than the current label value, the original labels will remain in effect.

4. Relabel Timing

Recalculated label values must be applied the first day of production of the running change.

C. Unique Fuel Economy Label Values

Under the provisions of 40 CFR 600.207-86(a)(2), the manufacturer may elect to subdivide a model type in order to separate subconfigurations and highlight their fuel economy values. In order to qualify to use these unique labels the manufacturer must assign the vehicle a unique carline name which must appear on the label and the vehicle (among other requirements). In order to satisfy the requirement that the name must appear on the vehicle, the name must be permanently attached to the vehicle's exterior. EPA will approve any carline name that is different from the other manufacturer's carline names (variants of existing names will be accepted, e.g., Mustang, Mustang MPG).

D. Changing Types of Labels During the Model Year

1. Change from Specific Label to General Label

A change from a specific label to a general label is allowed throughout the model year. However, specific labels may be used no later than 15 days after general labels have been calculated for that model type under the provisions of 40 CFR 600.306-86(a)(2).

2. Change from a General Label to a Specific Label

A change to a specific label is allowed only during the 15 days immediately following the approval of a general label value. The vehicles will revert to general labels 15 days after the general label was approved.



3. Change from Specific Labels to Unique Labels

Unique labels are treated as a type of general label, consequently this change is allowed throughout the model year provided the data requirements for unique labels are satisfied.

4. Change from a General Label to a Unique Label

Manufacturers are not allowed to separate out subconfigurations to form a unique label from a general label containing those subconfigurations once the general label is approved.

5. Change from a Unique Label to a General Label

Manufacturers are not allowed to include subconfigurations that have previously been used in an approved unique label in a subsequent general label calculation.

6. Change from a Unique Label to a Specific Label

A change to specific label is allowed only during the 15 days immediately following the approval of the unique label value. If the specific label contains subconfigurations not included in the unique label, any general label approved for those vehicles must be approved no more than 15 days before the specific label approval date. The vehicle's specific label will revert to unique labels and/or general labels after 15 days after the unique labels and/or general labels were approved.

7. Discontinuance of an Existing Label

Under the provisions of 40 CFR 600.306-86(a)(2)(ii), the manufacturer must discontinue the use of the previous type of label within five calendar days after it has begun using the new type of label.

8. High Altitude Labels

Under the provisions of 40 CFR 600.310-86(b), the manufacturer may label high altitude vehicles with general or specific labels without regard to the type of label (general or specific) used at low altitude for that model type or vehicle configuration.

Director, Office of Mobile Sources